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| 09/834,660 | 04/12/2001 | Luan C. Tran | MI22-1637 | 6625 |
| 21567 7590 05/30/2007 WELLS ST. JOHN P.S. 601 W. FIRST AVENUE, SUITE 1300 SPOKANE, WA 99201 | | | | |
| | | | EXAMINER SCHILLINGER, LAURA M | |
| | | | ART UNIT 2813 | PAPER NUMBER |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

09/834,660

Applicant(s)

TRAN, LUAN C.

Examiner

Laura M. Schillinger

Art Unit

2813

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 April 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-30 and 61-108 is/are pending in the application.
- 4a) Of the above claim(s) 83-108 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 21-30 and 61-82 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/21/06; 4/12/07</u> | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 2813

DETAILED ACTION

Election/Restrictions

Newly submitted claims 105-108 directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: claims 105-108 pertain to a separate and distinct species from that of the originally elected claims.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claim 105-108 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 21-30, 61-82 are rejected under 35 U.S.C. 102(b) as being anticipated by Liou et al ('268).

In reference to claim 21, Liou et al teaches a method comprising:

Forming two series of FETs over a substrate (Fig.1f), one being isolated from adjacent devices by STI, the other having active area widths greater than 1um and , the one series being formed to have active area widths less than 1 um (Col.7, lines: 60-65) to achieve lower threshold voltages (TVs) than the other of the series (inherent-see Schuegraf et al ('976)- teaching that the trench isolation effects the threshold voltage (Col.2, lines: 35-45)).

In reference to claim 22, Liou et al teaches wherein the TVs for the 2 series of FETS are defined by a common channel implant (Col.5, lines: 1-10) inherent-see Schuegraf et al ('976)- teaching that the substrate doping effects the threshold voltage (Col.2, lines: 35-45)).

In reference to claim 23, Liou et al teaches wherein the threshold voltages for the two series of FETs are defined by a common channel implant, the implant being the only channel implant which defines the TVs for the two series of FETs (Col.5, lines: 1-10 inherent-see Schuegraf et al ('976)- teaching that the substrate doping effects the threshold voltage (Col.2, lines: 35-45)).

In reference to claim 24, Liou et al teaches wherein the TVs for the two series of FETs are defined by one or more common channel implants (Col.5, lines: 1-10 inherent-see Schuegraf et al ('976)- teaching that the substrate doping effects the threshold voltage (Col.2, lines: 35-45)).

In reference to claim 25, Liou et al teaches wherein the TVs for the two series of FETs are defined by one or more common channel implants, the common channel implants being the only channel implants which define the TV for the two series of FETs (Col.5, lines: 1-10 inherent-see

Art Unit: 2813

Schuegraf et al ('976)- teaching that the substrate doping effects the threshold voltage (Col.2, lines: 35-45)).

In reference to claim 26, Liou et al teaches a method of forming two series of FETs over a substrate (Fig.2F one being isolated from adjacent devices by STI (Fig.2f (28)) and achieving different TVs by varying the active widths of the FETs in the series providing a first series of transistors having active area widths less than active area widths of a second series of transistors and wherein the threshold voltages of the transistors of the first series are less than the threshold voltages of the transistors of the second series, at least one series having active area widths less than one micron (Col.7, lines: 60-65- inherent- see Schuegraf et al ('976)- teaching that the trench isolation effects the threshold voltage (Col.2, lines: 35-45)).

In reference to claim 27, Liou et al teaches wherein the TVs for the 2 series of FETS are defined by a common channel implant (Col.5, lines: 1-10 inherent-see Schuegraf et al ('976)- teaching that the substrate doping effects the threshold voltage (Col.2, lines: 35-45)).

In reference to claim 28, Liou et al teaches wherein the threshold voltages for the two series of FETs are defined by a common channel implant, the implant being the only channel implant which defines the TVs for the two series of FETs (Col.5, lines: 1-10 inherent-see Schuegraf et al ('976)- teaching that the substrate doping effects the threshold voltage (Col.2, lines: 35-45)).

Art Unit: 2813

In reference to claim 29, Liou et al teaches wherein the TVs for the two series of FETs are defined by one or more common channel implants (Col.5, lines: 1-10 inherent-see Schuegraf et al ('976)- teaching that the substrate doping effects the threshold voltage (Col.2, lines: 35-45)).

In reference to claim 30, Liou et al teaches wherein the TVs for the two series of FETs are defined by one or more common channel implants, the common channel implants being the only channel implants which define the TV for the two series of FETs (Col.5, lines: 1-10).

In reference to claim 61, Liou et al teaches wherein the transistors of the two series comprise transistors having a single geometry type (Fig.2f)

In reference to claim 62, Liou et al teaches wherein the transistors of the single geometry type comprise planar transistors (Fig.2f).

In reference to claim 63, further comprising performing a common channel implant within active areas of the transistors of the two series at the same moment in time (Col.5, lines: 1-10).

64. The semiconductor processing method of claim 21, further comprising performing a common channel implant within active areas of both of the series of the transistors at the same moment in time to define the different threshold voltages of the transistors of the two series (Col.5, lines: 1-10 inherent-see Schuegraf et al ('976)- teaching that the substrate doping effects the threshold voltage (Col.2, lines: 35-45)).).

65. The semiconductor processing method of claim 64, wherein the common channel implant is the only channel implant which defines the different threshold voltages of the transistors of the two series (Col.5, lines: 1-10- inherent-see Schuegraf et al ('976)- teaching that the substrate doping effects the threshold voltage (Col.2, lines: 35-45)).

66. Liou teaches the semiconductor processing method of claim 21, further comprising implanting an impurity into active areas of the transistors of the two series at the same moment in time(Col.5, lines: 1-10).

67. Liou teaches the semiconductor processing method of claim 21, further comprising implanting an impurity into active areas of the transistors of the two series at the same moment in time to simultaneously define the different threshold voltages of the transistors of the two series(Col.5, lines: 1-10- inherent-see Schuegraf et al ('976)- teaching that the substrate doping effects the threshold voltage (Col.2, lines: 35-45)).

68 . Liou teaches the semiconductor processing method of claim 67, wherein the implanting of the impurity is the only implant which defines the different threshold voltages of the transistors of the two series ((Col.5, lines: 1-10- inherent-see Schuegraf et al ('976)- teaching that the substrate doping effects the threshold voltage (Col.2, lines: 35-45)).

Art Unit: 2813

In reference to claim 69, Liou et al teaches wherein the common channel implant comprises implanting a single type of impurity (P-Col.5, lines: 1-10)

In reference to claim 70, Liou et al teaches wherein the common channel implant comprises implanting a single type of impurity to define the different T_{vs} of the transistors of the two series (Col.5, lines: 1-10- inherent-see Schuegraf et al ('976)- teaching that the substrate doping effects the threshold voltage (Col.2, lines: 35-45)).

In reference to claim 71, Liou et al teaches wherein the transistors of the two series comprise transistors having a single geometry type (Fig.2f)

In reference to claim 72, Liou et al teaches wherein the transistors of the single geometry type comprise planar transistors (Fig.2f).

73. Liou teaches the semiconductor processing method of claim 26, further comprising performing a common channel implant within active areas of the transistors of the two series at the same moment in time (Col.5, lines: 1-10)

74. Liou teaches the semiconductor processing method of claim 26, further comprising performing a common channel implant within active areas of both of the series of the transistors at the same moment in time to define the different threshold voltages of the transistors of the two

Art Unit: 2813

series ((Col.5, lines: 1-10- inherent-see Schuegraf et al ('976)- teaching that the substrate doping effects the threshold voltage (Col.2, lines: 35-45)).

75. Liou teaches the semiconductor processing method of claim 74, wherein the common channel implant is the only channel implant which defines the different threshold voltages of the transistors of the two series ((Col.5, lines: 1-10- inherent-see Schuegraf et al ('976)- teaching that the substrate doping effects the threshold voltage (Col.2, lines: 35-45)).

76 . Liou teaches the semiconductor processing method of claim 26, further comprising implanting an impurity into active areas of the transistors of the two series at the same moment in time (Col.5, lines: 1-10)

77. Liou teaches the semiconductor processing method of claim 26, further comprising implanting an impurity into active areas of the transistors of the two series at the same moment in time to simultaneously define the different threshold voltages of the transistors of the two series((Col.5, lines: 1-10- inherent-see Schuegraf et al ('976)- teaching that the substrate doping effects the threshold voltage (Col.2, lines: 35-45)).

Art Unit: 2813

78. Liou teaches the semiconductor processing method of claim 77, wherein the implanting of the impurity is the only implant which defines the different threshold voltages of the transistors of the two series (Col.5, lines: 1-10).

In reference to claim 79, Liou et al teaches wherein the common channel implant comprises implanting a single type of impurity (P-Col.5, lines: 1-10)

In reference to claim 80, Liou et al teaches wherein the common channel implant comprises implanting a single type of impurity to define the different T_{vs} of the transistors of the two series ((Col.5, lines: 1-10- inherent-see Schuegraf et al ('976)- teaching that the substrate doping effects the threshold voltage (Col.2, lines: 35-45)).

In reference to claim 81, Liou et al teaches wherein the active area widths individually correspond to a dimension of an active area of respective FET between plural STI regions (STI) immediately adjacent to opposing sides of the active area of the respective FET (Fig.2f)

In reference to claim 82, Liou et al teaches wherein the active area widths individually correspond to a dimension of an active area of respective FET between plural STI regions (STI) immediately adjacent to opposing sides of the active area of the respective FET (Fig.2f)

Response to Arguments

Art Unit: 2813

Applicant's arguments filed 11/21/06 have been fully considered but they are not persuasive. Applicant argues that Liou fails to teach STI, however such an argument is not persuasive, among other teachings, Applicant is referred to the title of the Liou reference "Method for Forming Planarized Shallow Trench Isolation ...".

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

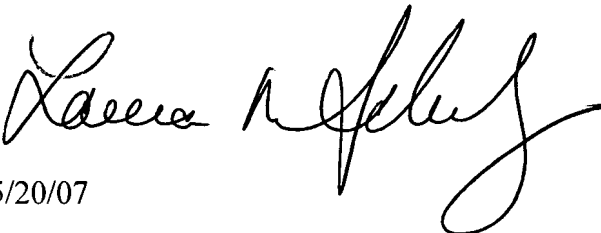
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura M. Schillinger whose telephone number is (571) 272-1697. The examiner can normally be reached on M-T, R-F 7:00-5:00.

Art Unit: 2813

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl W. Whitehead, Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


05/20/07

Laura M Schillinger
Primary Examiner
Art Unit 2813